



1

## SEQUENCE LISTING

<110> YAO, YONG  
XU, HONG

<120> G-ALPHA-Q PROTEIN VARIANTS AND THEIR USE IN THE  
ANALYSIS AND DISCOVERY OF AGONISTS AND ANTAGONISTS OF  
CHEMOSENSORY RECEPTORS

<130> 078003-0280735

<140> 09/989,497

<141> 2001-11-21

<150> 09/984,292

<151> 2001-10-29

<150> 60/243,770

<151> 2000-10-30

<160> 42

<170> PatentIn Ver. 2.1

<210> 1

<211> 359

<212> PRT

<213> Mus sp.

<400> 1

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp  
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr  
115 120 125

Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
 145 150 155 160  
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln  
 165 170 175  
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
 180 185 190  
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
 195 200 205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Glu Tyr Asn Leu Val  
 355

<210> 2  
 <211> 353  
 <212> PRT  
 <213> Mus sp.

<400> 2  
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
 1 5 10 15  
 Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg  
 20 25 30  
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu  
 50 55 60  
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
 65 70 75 80  
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95  
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110  
 Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr Val Asp Ala Ile Lys Ser  
 115 120 125  
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140  
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160  
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175  
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
 180 185 190  
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
 195 200 205  
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
 210 215 220  
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240  
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270  
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285  
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300  
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320  
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335  
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu  
 340 345 350  
 Val

<210> 3  
 <211> 359  
 <212> PRT  
 <213> Mus sp.

<400> 3  
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
           1                  5                  10                  15  
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp  
                   20                  25                  30  
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly  
           35                  40                  45  
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
           50                  55                  60  
 Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
           65                  70                  75                  80  
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
                   85                  90                  95  
 Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
                   100                  105                  110  
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp  
           115                  120                  125  
 Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
           130                  135                  140  
 Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
           145                  150                  155                  160  
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln  
                   165                  170                  175  
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
                   180                  185                  190  
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
           195                  200                  205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
           210                  215                  220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
           225                  230                  235                  240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
                   245                  250                  255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
340 345 350

Leu Lys Glu Tyr Asn Leu Val  
355

<210> 4  
<211> 353  
<212> PRT  
<213> Mus sp.

<400> 4  
Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
1 5 10 15  
Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg  
20 25 30  
Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
35 40 45  
Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu  
50 55 60  
Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
65 70 75 80  
Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
85 90 95  
Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
100 105 110  
Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
115 120 125  
Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
130 135 140  
Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
145 150 155 160

Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
180 185 190

Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu  
340 345 350

Val

<210> 5

<211> 353

<212> PRT

<213> Mus sp.

<400> 5

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
1 5 10 15

Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg  
20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu  
50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
 65 70 75 80  
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95  
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110  
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
 115 120 125  
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140  
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160  
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175  
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
 180 185 190  
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
 195 200 205  
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
 210 215 220  
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240  
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270  
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285  
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300  
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320  
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335  
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu  
 340 345 350  
 Val

<210> 6  
 <211> 353  
 <212> PRT  
 <213> Mus sp.

<400> 6  
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
           1                  5                  10                  15  
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
                   20                  25                  30  
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
           35                  40                  45  
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu  
           50                  55                  60  
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
           65                  70                  75                  80  
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
                   85                  90                  95  
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
                   100                  105                  110  
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
           115                  120                  125  
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
           130                  135                  140  
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
           145                  150                  155                  160  
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
                   165                  170                  175  
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
                   180                  185                  190  
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
           195                  200                  205  
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
           210                  215                  220  
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
           225                  230                  235                  240  
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
                   245                  250                  255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
           260                  265                  270



Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Asp Cys Gly Leu  
 340 345 350

Phe

<210> 7

<211> 357

<212> PRT

<213> Mus sp.

<400> 7

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
 1 5 10 15

Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
 20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu  
 50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
 65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
 115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140

Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160

Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
180 185 190

Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Asn Met Arg Arg Asp Val Lys  
305 310 315 320

Glu Ile Tyr Ser His Met Thr Cys Ala Thr Asp Thr Gln Asn Val Lys  
325 330 335

Phe Val Phe Asp Ala Val Thr Asp Ile Ile Ile Lys Glu Asn Leu Lys  
340 345 350

Asp Cys Gly Leu Phe  
355

<210> 8  
<211> 353  
<212> PRT  
<213> Mus sp.

<400> 8  
Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
1 5 10 15

Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu  
50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95  
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110  
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
 115 120 125  
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140  
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160  
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175  
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
 180 185 190  
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
 195 200 205  
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
 210 215 220  
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240  
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270  
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285  
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300  
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320  
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335  
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu  
 340 345 350

Val

&lt;210&gt; 9

&lt;211&gt; 359

<212> PRT  
<213> Mus sp.

```

<400> 9
Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
  1           5           10           15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
      20           25           30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly
      35           40           45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
      50           55           60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
      65           70           75           80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
      85           90           95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
      100          105          110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp
      115          120          125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
      130          135          140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
      145          150          155          160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
      165          170          175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
      180          185          190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
      195          200          205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
      210          215          220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
      225          230          235          240

Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
      245          250          255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
      260          265          270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
      275          280          285

```

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350

Leu Lys Glu Tyr Asn Leu Val  
 355

<210> 10  
 <211> 359  
 <212> PRT  
 <213> Mus sp.

<400> 10  
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
 1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp  
 20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
 35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
 50 55 60

Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
 65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
 85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
 100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp  
 115 120 125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
 130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
 145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln  
 165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
 180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
 195 200 205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Glu Tyr Asn Leu Val  
 355

<210> 11  
 <211> 359  
 <212> PRT  
 <213> Mus sp.

<400> 11  
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
 1 5 10 15  
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp  
 20 25 30  
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
 35 40 45  
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
 50 55 60  
 Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
 65 70 75 80  
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
 85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
 100 105 110  
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp  
 115 120 125  
 Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
 130 135 140  
 Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
 145 150 155 160  
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln  
 165 170 175  
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
 180 185 190  
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
 195 200 205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Glu Tyr Asn Leu Val  
 355

<210> 12  
 <211> 359  
 <212> PRT  
 <213> Mus sp.

&lt;400&gt; 12

Met	Thr	Leu	Glu	Ser	Ile	Met	Ala	Cys	Cys	Leu	Ser	Glu	Glu	Ala	Lys
1				5				10						15	
Glu	Ala	Arg	Arg	Ile	Asn	Asp	Glu	Ile	Glu	Arg	His	Val	Arg	Arg	Asp
			20					25					30		
Lys	Arg	Asp	Ala	Arg	Arg	Glu	Leu	Lys	Leu	Leu	Leu	Leu	Gly	Thr	Gly
		35					40						45		
Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	Ile	His	Gly
	50					55					60				
Ser	Gly	Tyr	Ser	Asp	Glu	Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr
65					70					75					80
Gln	Asn	Ile	Phe	Thr	Ala	Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr
				85					90					95	
Leu	Lys	Ile	Pro	Tyr	Lys	Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu
			100					105					110		
Val	Arg	Glu	Val	Asp	Val	Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp
		115					120					125			
Tyr	Ala	Ala	Ile	Lys	Ser	Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys
	130					135					140				
Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr
145					150					155					160
Leu	Asn	Asp	Leu	Asp	Arg	Val	Ala	Asp	Pro	Ser	Tyr	Leu	Pro	Thr	Gln
			165						170					175	
Gln	Asp	Val	Leu	Arg	Val	Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr
			180					185					190		
Pro	Phe	Asp	Leu	Gln	Ser	Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly
		195					200					205			
Gln	Arg	Ser	Glu	Arg	Arg	Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr
		210				215					220				
Ser	Ile	Met	Phe	Leu	Val	Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val
225					230					235					240
Glu	Ser	Asp	Asn	Glu	Asn	Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg
			245					250						255	
Thr	Ile	Ile	Thr	Tyr	Pro	Trp	Phe	Gln	Asn	Ser	Ser	Val	Ile	Leu	Phe
			260					265					270		
Leu	Asn	Lys	Lys	Asp	Leu	Leu	Glu	Glu	Lys	Ile	Met	Tyr	Ser	His	Leu
		275					280					285			
Val	Asp	Tyr	Phe	Pro	Glu	Tyr	Asp	Gly	Pro	Gln	Arg	Asp	Ala	Gln	Ala
	290					295					300				



Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
340 345 350

Leu Lys Asp Cys Gly Leu Phe  
355

<210> 13

<211> 359

<212> PRT

<213> Mus sp.

<400> 13

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp  
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly  
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
50 55 60

Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp  
115 120 125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln  
165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Asp Cys Gly Leu Phe  
 355

<210> 14  
 <211> 353  
 <212> PRT  
 <213> Mus sp.

<400> 14  
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
 1 5 10 15  
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
 20 25 30  
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
 35 40 45  
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu  
 50 55 60  
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
 65 70 75 80  
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95  
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
 115 120 125  
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140  
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160  
 Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175  
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
 180 185 190  
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
 195 200 205  
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
 210 215 220  
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240  
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270  
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285  
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300  
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320  
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335  
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Gln Tyr Glu Leu  
 340 345 350

Leu

<210> 15

<211> 359

<212> PRT

<213> Homo sapiens

<400> 15

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
 1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp  
 20 25 30  
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
 35 40 45  
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
 50 55 60  
 Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
 65 70 75 80  
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
 85 90 95  
 Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
 100 105 110  
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr  
 115 120 125  
 Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
 130 135 140  
 Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
 145 150 155 160  
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln  
 165 170 175  
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
 180 185 190  
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
 195 200 205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320

Asp Lys Ile Asn Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
340 345 350

Leu Lys Glu Tyr Asn Ala Val  
355

<210> 16

<211> 353

<212> PRT

<213> Homo sapiens

<400> 16

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
1 5 10 15

Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg  
20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu  
50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
100 105 110

Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr Val Asp Ala Ile Lys Ser  
115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
130 135 140

Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
145 150 155 160

Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
180 185 190

Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Ala  
 340 345 350

Val

<210> 17  
 <211> 353  
 <212> PRT  
 <213> Homo sapiens

<400> 17  
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
 1 5 10 15

Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
 20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu  
 50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
 65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
 115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140  
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160  
 Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175  
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
 180 185 190  
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
 195 200 205  
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
 210 215 220  
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240  
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270  
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285  
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300  
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320  
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335  
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu  
 340 345 350  
 Val

<210> 18  
 <211> 353  
 <212> PRT  
 <213> Homo sapiens

<400> 18  
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
 1 5 10 15  
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
 20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
 35 40 45  
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu  
 50 55 60  
 Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
 65 70 75 80  
 Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95  
 Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110  
 Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
 115 120 125  
 Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140  
 Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160  
 Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175  
 Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
 180 185 190  
 Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
 195 200 205  
 Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
 210 215 220  
 Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240  
 Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270  
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285  
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300  
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320  
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335



Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Asp Cys Gly Leu  
 340 345 350

Phe

<210> 19  
 <211> 353  
 <212> PRT  
 <213> Homo sapiens

<400> 19

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
 1 5 10 15

Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
 20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu  
 50 55 60

Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe Thr Ala  
 65 70 75 80

Met Gln Ala Met Ile Arg Ala Met Asp Thr Leu Lys Ile Pro Tyr Lys  
 85 90 95

Tyr Glu His Asn Lys Ala His Ala Gln Leu Val Arg Glu Val Asp Val  
 100 105 110

Glu Lys Val Ser Ala Phe Asp Val Pro Asp Tyr Ala Ala Ile Lys Ser  
 115 120 125

Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu  
 130 135 140

Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asn Asp Leu Asp Arg  
 145 150 155 160

Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln Gln Asp Val Leu Arg Val  
 165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Gln Ser  
 180 185 190

Val Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg  
 195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
 210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn  
 225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro  
 245 250 255  
 Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu  
 260 265 270  
 Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu  
 275 280 285  
 Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala Ala Arg Glu Phe Ile Leu  
 290 295 300  
 Lys Met Phe Val Asp Leu Asn Pro Asp Ser Asp Lys Ile Ile Tyr Ser  
 305 310 315 320  
 His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala  
 325 330 335  
 Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Asp Cys Gly Leu  
 340 345 350

Phe

<210> 20  
 <211> 359  
 <212> PRT  
 <213> Homo sapiens

<400> 20  
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
 1 5 10 15  
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp  
 20 25 30  
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
 35 40 45  
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
 50 55 60  
 Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
 65 70 75 80  
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
 85 90 95  
 Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
 100 105 110  
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp  
 115 120 125  
 Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
 130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
 145 150 155 160  
 Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln  
 165 170 175  
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
 180 185 190  
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
 195 200 205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Glu Tyr Asn Leu Val  
 355

<210> 21  
 <211> 359  
 <212> PRT  
 <213> Homo sapiens

<400> 21  
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
 1 5 10 15  
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp  
 20 25 30  
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
 35 40 45

Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	Ile	His	Gly
50						55					60				
Ser	Asp	Tyr	Ser	Asp	Glu	Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr
65					70					75					80
Gln	Asn	Ile	Phe	Thr	Ala	Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr
				85					90					95	
Leu	Lys	Ile	Pro	Tyr	Lys	Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu
			100					105					110		
Val	Arg	Glu	Val	Asp	Val	Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp
		115					120					125			
Tyr	Ala	Ala	Ile	Lys	Ser	Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys
	130					135					140				
Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr
145					150					155					160
Leu	Asn	Asp	Leu	Asp	Arg	Val	Ala	Asp	Pro	Ala	Tyr	Leu	Pro	Thr	Gln
				165					170					175	
Gln	Asp	Val	Leu	Arg	Val	Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr
			180					185					190		
Pro	Phe	Asp	Leu	Gln	Ser	Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly
		195					200					205			
Gln	Arg	Ser	Glu	Arg	Arg	Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr
		210				215					220				
Ser	Ile	Met	Phe	Leu	Val	Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val
225					230					235					240
Glu	Ser	Asp	Asn	Glu	Asn	Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg
				245					250					255	
Thr	Ile	Ile	Thr	Tyr	Pro	Trp	Phe	Gln	Asn	Ser	Ser	Val	Ile	Leu	Phe
			260					265					270		
Leu	Asn	Lys	Lys	Asp	Leu	Leu	Glu	Glu	Lys	Ile	Met	Tyr	Ser	His	Leu
		275					280					285			
Val	Asp	Tyr	Phe	Pro	Glu	Tyr	Asp	Gly	Pro	Gln	Arg	Asp	Ala	Gln	Ala
	290					295					300				
Ala	Arg	Glu	Phe	Ile	Leu	Lys	Met	Phe	Val	Asp	Leu	Asn	Pro	Asp	Ser
305					310					315					320
Asp	Lys	Ile	Ile	Tyr	Ser	His	Phe	Thr	Cys	Ala	Thr	Asp	Thr	Glu	Asn
				325					330					335	
Ile	Arg	Phe	Val	Phe	Ala	Ala	Val	Lys	Asp	Thr	Ile	Leu	Gln	Leu	Asn
			340					345					350		

Leu Lys Glu Tyr Asn Leu Val  
355

<210> 22

<211> 359

<212> PRT

<213> Homo sapiens

<400> 22

Met	Thr	Leu	Glu	Ser	Ile	Met	Ala	Cys	Cys	Leu	Ser	Glu	Glu	Ala	Lys
1				5					10					15	
Glu	Ala	Arg	Arg	Ile	Asn	Asp	Glu	Ile	Glu	Arg	His	Val	Arg	Arg	Asp
			20					25					30		
Lys	Arg	Asp	Ala	Arg	Arg	Glu	Leu	Lys	Leu	Leu	Leu	Leu	Gly	Thr	Gly
		35					40						45		
Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	Ile	His	Gly
	50					55					60				
Ser	Gly	Tyr	Ser	Asp	Glu	Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr
65					70					75					80
Gln	Asn	Ile	Phe	Thr	Ala	Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr
				85					90					95	
Leu	Lys	Ile	Pro	Tyr	Lys	Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu
			100					105					110		
Val	Arg	Glu	Val	Asp	Val	Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp
		115					120					125			
Tyr	Ala	Ala	Ile	Lys	Ser	Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys
	130					135					140				
Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr
145					150					155					160
Leu	Asn	Asp	Leu	Asp	Arg	Val	Ala	Asp	Pro	Ala	Tyr	Leu	Pro	Thr	Gln
				165					170					175	
Gln	Asp	Val	Leu	Arg	Val	Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr
			180					185					190		
Pro	Phe	Asp	Leu	Gln	Ser	Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly
		195					200					205			
Gln	Arg	Ser	Glu	Arg	Arg	Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr
			210			215					220				
Ser	Ile	Met	Phe	Leu	Val	Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val
225					230					235					240
Glu	Ser	Asp	Asn	Glu	Asn	Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg
			245						250					255	

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Asp Cys Gly Leu Phe  
 355

<210> 23  
 <211> 359  
 <212> PRT  
 <213> Homo sapiens

<400> 23  
 Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
 1 5 10 15  
 Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp  
 20 25 30  
 Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
 35 40 45  
 Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
 50 55 60  
 Ser Asp Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
 65 70 75 80  
 Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
 85 90 95  
 Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
 100 105 110  
 Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp  
 115 120 125  
 Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
 130 135 140  
 Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
 145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln  
 165 170 175  
 Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
 180 185 190  
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
 195 200 205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Asn Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Asp Cys Gly Leu Phe  
 355

<210> 24  
 <211> 353  
 <212> PRT  
 <213> Homo sapiens

<400> 24  
 Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Ala Arg Arg Ile Asn  
 1 5 10 15  
 Asp Glu Ile Glu Arg His Val Arg Arg Asp Lys Arg Asp Ala Arg Arg  
 20 25 30  
 Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr  
 35 40 45  
 Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Asp Tyr Ser Asp Glu  
 50 55 60

Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr	Gln	Asn	Ile	Phe	Thr	Ala	65	70	75	80
Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr	Leu	Lys	Ile	Pro	Tyr	Lys	85	90	95	
Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu	Val	Arg	Glu	Val	Asp	Val	100	105	110	
Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp	Tyr	Ala	Ala	Ile	Lys	Ser	115	120	125	
Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys	Tyr	Asp	Arg	Arg	Arg	Glu	130	135	140	
Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr	Leu	Asn	Asp	Leu	Asp	Arg	145	150	155	160
Val	Ala	Asp	Pro	Ala	Tyr	Leu	Pro	Thr	Gln	Gln	Asp	Val	Leu	Arg	Val	165	170	175	
Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr	Pro	Phe	Asp	Leu	Gln	Ser	180	185	190	
Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly	Gln	Arg	Ser	Glu	Arg	Arg	195	200	205	
Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr	Ser	Ile	Met	Phe	Leu	Val	210	215	220	
Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val	Glu	Ser	Asp	Asn	Glu	Asn	225	230	235	240
Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg	Thr	Ile	Ile	Thr	Tyr	Pro	245	250	255	
Trp	Phe	Gln	Asn	Ser	Ser	Val	Ile	Leu	Phe	Leu	Asn	Lys	Lys	Asp	Leu	260	265	270	
Leu	Glu	Glu	Lys	Ile	Met	Tyr	Ser	His	Leu	Val	Asp	Tyr	Phe	Pro	Glu	275	280	285	
Tyr	Asp	Gly	Pro	Gln	Arg	Asp	Ala	Gln	Ala	Ala	Arg	Glu	Phe	Ile	Leu	290	295	300	
Lys	Met	Phe	Val	Asp	Leu	Asn	Pro	Asp	Ser	Asp	Lys	Ile	Ile	Tyr	Ser	305	310	315	320
His	Phe	Thr	Cys	Ala	Thr	Asp	Thr	Glu	Asn	Ile	Arg	Phe	Val	Phe	Ala	325	330	335	
Ala	Val	Lys	Asp	Thr	Ile	Leu	Gln	Leu	Asn	Leu	Lys	Gln	Tyr	Glu	Leu	340	345	350	
Leu																			



<210> 25  
 <211> 359  
 <212> PRT  
 <213> Homo sapiens

<400> 25

Met	Thr	Leu	Glu	Ser	Ile	Met	Ala	Cys	Cys	Leu	Ser	Glu	Glu	Ala	Lys
1				5					10					15	
Glu	Ala	Arg	Arg	Ile	Asn	Asp	Glu	Ile	Glu	Arg	His	Val	Arg	Arg	Asp
			20					25					30		
Lys	Arg	Asp	Ala	Arg	Arg	Glu	Leu	Lys	Leu	Leu	Leu	Leu	Gly	Thr	Gly
		35					40					45			
Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	Ile	His	Gly
	50					55					60				
Ser	Asp	Tyr	Ser	Asp	Glu	Asp	Lys	Arg	Gly	Phe	Thr	Lys	Leu	Val	Tyr
65					70					75					80
Gln	Asn	Ile	Phe	Thr	Ala	Met	Gln	Ala	Met	Ile	Arg	Ala	Met	Asp	Thr
				85					90					95	
Leu	Lys	Ile	Pro	Tyr	Lys	Tyr	Glu	His	Asn	Lys	Ala	His	Ala	Gln	Leu
			100					105					110		
Val	Arg	Glu	Val	Asp	Val	Glu	Lys	Val	Ser	Ala	Phe	Asp	Val	Pro	Asp
		115					120					125			
Tyr	Ala	Ala	Ile	Lys	Ser	Leu	Trp	Asn	Asp	Pro	Gly	Ile	Gln	Glu	Cys
	130					135					140				
Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	Asp	Ser	Thr	Lys	Tyr	Tyr
145					150					155					160
Leu	Asn	Asp	Leu	Asp	Arg	Val	Ala	Asp	Pro	Ala	Tyr	Leu	Pro	Thr	Gln
				165					170					175	
Gln	Asp	Val	Leu	Arg	Val	Arg	Val	Pro	Thr	Thr	Gly	Ile	Ile	Glu	Tyr
			180					185					190		
Pro	Phe	Asp	Leu	Gln	Ser	Val	Ile	Phe	Arg	Met	Val	Asp	Val	Gly	Gly
		195					200					205			
Gln	Arg	Ser	Glu	Arg	Arg	Lys	Trp	Ile	His	Cys	Phe	Glu	Asn	Val	Thr
		210				215					220				
Ser	Ile	Met	Phe	Leu	Val	Ala	Leu	Ser	Glu	Tyr	Asp	Gln	Val	Leu	Val
225					230					235				240	
Glu	Ser	Asp	Asn	Glu	Asn	Arg	Met	Glu	Glu	Ser	Lys	Ala	Leu	Phe	Arg
			245						250					255	
Thr	Ile	Ile	Thr	Tyr	Pro	Trp	Phe	Gln	Asn	Ser	Ser	Val	Ile	Leu	Phe
			260					265					270		

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350

Leu Lys Gln Tyr Glu Leu Leu  
 355

<210> 26

<211> 359

<212> PRT

<213> Homo sapiens

<400> 26

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
 1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp  
 20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
 35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
 50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
 65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
 85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
 100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Asp Val Pro Asp  
 115 120 125

Tyr Ala Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
 130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
 145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln  
 165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
 180 185 190  
 Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
 195 200 205  
 Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
 210 215 220  
 Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Gln Tyr Glu Leu Leu  
 355

&lt;210&gt; 27

&lt;211&gt; 983

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

 <223> Description of Artificial Sequence: Synthetic  
 nucleotide sequence

&lt;400&gt; 27

```

atggcccggt ccctgacttg gggctgctgt ccctggtgcc tgacagagga ggagaagact 60
gccgccagaa tcgaccagga gatcaacagg attttggttg aacagaaaaa acaagagcgc 120
gaggaattga aactcctgct gttggggcct ggtgagagcg ggaagagtac gttcatcaag 180
cagatgcgca tcattcacgg tgtgggctac tcggaggagg accgcagagc cttccggctg 240
ctcatctacc agaacatctt cgtctccatg caggccatga tagatgcgat ggaccggctg 300
cagatcccct tcagcaggcc tgacagcaag cagcacgcca gcctagtgat gaccaggac 360
ccctataaag tgagcacatt cgagaagcca tatgcagtgg ccatgcagta cctgtggcgg 420
gacgcgggca tccgtgcatg ctacgagcga aggcgtgaat tccaccttct ggactccgcg 480
gtgtattacc tgtcacacct gggcgtagga aatggattca ctgttttgag aacgtgattg 540
ccctcatcta cctggcctcc ctgagcgagt atgaccagtg cctagaggag aacgatcagg 600
agaaccgcat ggaggagagt ctcgctctgt tcagcacgat cctagagctg ccctggttca 660

```

```

agagcacctc ggtcatcctc ttcctcaaca agacggacat cctggaagat aagattcaca 720
cctcccacct ggccacatac ttccccagct tccagggacc ccggcgagac gcagaggccg 780
ccaagagctt catcttggac atgtatgcgc gcgtgtacgc gagctgcgca gagccccagg 840
acggtggcag gaaaggctcc cgcgcgcgcc gcttcttcgc acatttcacc tgtgccacgg 900
acacgcaaag cgtccgcagc gtgttcaagg acgtgcggga ctcggtgctg gcccggtacc 960
tggacgagat caacctgctg tga 983

```

```

<210> 28
<211> 18
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

```

```

<400> 28
gactgtggcc tcttctga 18

```

```

<210> 29
<211> 18
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

```

```

<400> 29
gagtacaatc tggctctga 18

```

```

<210> 30
<211> 18
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

```

```

<400> 30
cagtatgagc tcttgtga 18

```

```

<210> 31
<211> 18
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

```

```

<400> 31
gagtgcggcc tctactga 18

```

<210> 32  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<400> 32  
ggatgcggac tctactga

18

<210> 33  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<400> 33  
tacatcggcc tctgctga

18

<210> 34  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<400> 34  
gacatcatgc tccaatga

18

<210> 35  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

<400> 35  
caactaatgc tccaatga

18

<210> 36  
<211> 18  
<212> DNA  
<213> Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
oligonucleotide

&lt;400&gt; 36

caccaggttg aactctga

18

&lt;210&gt; 37

&lt;211&gt; 359

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 37

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys  
1 5 10 15Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp  
20 25 30Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly  
35 40 45Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly  
50 55 60Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr  
65 70 75 80Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr  
85 90 95Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu  
100 105 110Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr  
115 120 125Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys  
130 135 140Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr  
145 150 155 160Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln  
165 170 175Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr  
180 185 190Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly  
195 200 205Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr  
210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val  
 225 230 235 240  
 Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg  
 245 250 255  
 Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe  
 260 265 270  
 Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu  
 275 280 285  
 Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala  
 290 295 300  
 Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser  
 305 310 315 320  
 Asp Lys Ile Asn Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn  
 325 330 335  
 Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn  
 340 345 350  
 Leu Lys Glu Tyr Asn Leu Val  
 355

<210> 38  
 <211> 374  
 <212> PRT  
 <213> Homo sapiens

<400> 38  
 Met Ala Arg Ser Leu Thr Trp Gly Cys Cys Pro Trp Cys Leu Thr Glu  
 1 5 10 15  
 Glu Glu Lys Thr Ala Ala Arg Ile Asp Gln Glu Ile Asn Arg Ile Leu  
 20 25 30  
 Leu Glu Gln Lys Lys Gln Glu Arg Glu Glu Leu Lys Leu Leu Leu  
 35 40 45  
 Gly Pro Gly Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile  
 50 55 60  
 Ile His Gly Val Gly Tyr Ser Glu Glu Asp Arg Arg Ala Phe Arg Leu  
 65 70 75 80  
 Leu Ile Tyr Gln Asn Ile Phe Val Ser Met Gln Ala Met Ile Asp Ala  
 85 90 95  
 Met Asp Arg Leu Gln Ile Pro Phe Ser Arg Pro Asp Ser Lys Gln His  
 100 105 110  
 Ala Ser Leu Val Met Thr Gln Asp Pro Tyr Lys Val Ser Thr Phe Glu  
 115 120 125

Lys Pro Tyr Ala Val Ala Met Gln Tyr Leu Trp Arg Asp Ala Gly Ile  
 130 135 140  
 Arg Ala Cys Tyr Glu Arg Arg Arg Glu Phe His Leu Leu Asp Ser Ala  
 145 150 155 160  
 Val Tyr Tyr Leu Ser His Leu Glu Arg Ile Ser Glu Asp Ser Tyr Ile  
 165 170 175  
 Pro Thr Ala Gln Asp Val Leu Arg Ser Arg Met Pro Thr Thr Gly Ile  
 180 185 190  
 Asn Glu Tyr Cys Phe Ser Val Lys Lys Thr Lys Leu Arg Ile Val Asp  
 195 200 205  
 Val Gly Gly Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu  
 210 215 220  
 Asn Val Ile Ala Leu Ile Tyr Leu Ala Ser Leu Ser Glu Tyr Asp Gln  
 225 230 235 240  
 Cys Leu Glu Glu Asn Asp Gln Glu Asn Arg Met Glu Glu Ser Leu Ala  
 245 250 255  
 Leu Phe Ser Thr Ile Leu Glu Leu Pro Trp Phe Lys Ser Thr Ser Val  
 260 265 270  
 Ile Leu Phe Leu Asn Lys Thr Asp Ile Leu Glu Asp Lys Ile His Thr  
 275 280 285  
 Ser His Leu Ala Thr Tyr Phe Pro Ser Phe Gln Gly Pro Arg Arg Asp  
 290 295 300  
 Ala Glu Ala Ala Lys Ser Phe Ile Leu Asp Met Tyr Ala Arg Val Tyr  
 305 310 315 320  
 Ala Ser Cys Ala Glu Pro Gln Asp Gly Gly Arg Lys Gly Ser Arg Ala  
 325 330 335  
 Arg Arg Phe Phe Ala His Phe Thr Cys Ala Thr Asp Thr Gln Ser Val  
 340 345 350  
 Arg Ser Val Phe Lys Asp Val Arg Asp Ser Val Leu Ala Arg Tyr Leu  
 355 360 365  
 Asp Glu Ile Asn Leu Leu  
 370

<210> 39  
 <211> 374  
 <212> PRT  
 <213> Homo sapiens

<400> 39  
 Met Ala Arg Ser Leu Thr Trp Arg Cys Cys Pro Trp Cys Leu Thr Glu  
 1 5 10 15



Asp	Glu	Lys	Ala	Ala	Ala	Arg	Val	Asp	Gln	Glu	Ile	Asn	Arg	Ile	Leu	20	25	30	
Leu	Glu	Gln	Lys	Lys	Gln	Asp	Arg	Gly	Glu	Leu	Lys	Leu	Leu	Leu	Leu	35	40	45	
Gly	Pro	Gly	Glu	Ser	Gly	Lys	Ser	Thr	Phe	Ile	Lys	Gln	Met	Arg	Ile	50	55	60	
Ile	His	Gly	Ala	Gly	Tyr	Ser	Glu	Glu	Glu	Arg	Lys	Gly	Phe	Arg	Pro	65	70	75	80
Leu	Val	Tyr	Gln	Asn	Ile	Phe	Val	Ser	Met	Arg	Ala	Met	Ile	Glu	Ala	85	90	95	
Met	Glu	Arg	Leu	Gln	Ile	Pro	Phe	Ser	Arg	Pro	Glu	Ser	Lys	His	His	100	105	110	
Ala	Ser	Leu	Val	Met	Ser	Gln	Asp	Pro	Tyr	Lys	Val	Thr	Thr	Phe	Glu	115	120	125	
Lys	Arg	Tyr	Ala	Ala	Ala	Met	Gln	Trp	Leu	Trp	Arg	Asp	Ala	Gly	Ile	130	135	140	
Arg	Ala	Cys	Tyr	Glu	Arg	Arg	Arg	Glu	Phe	His	Leu	Leu	Asp	Ser	Ala	145	150	155	160
Val	Tyr	Tyr	Leu	Ser	His	Leu	Glu	Arg	Ile	Thr	Glu	Glu	Gly	Tyr	Val	165	170	175	
Pro	Thr	Ala	Gln	Asp	Val	Leu	Arg	Ser	Arg	Met	Pro	Thr	Thr	Gly	Ile	180	185	190	
Asn	Glu	Tyr	Cys	Phe	Ser	Val	Gln	Lys	Thr	Asn	Leu	Arg	Ile	Val	Asp	195	200	205	
Val	Gly	Gly	Gln	Lys	Ser	Glu	Arg	Lys	Lys	Trp	Ile	His	Cys	Phe	Glu	210	215	220	
Asn	Val	Ile	Ala	Leu	Ile	Tyr	Leu	Ala	Ser	Leu	Ser	Glu	Tyr	Asp	Gln	225	230	235	240
Cys	Leu	Glu	Glu	Asn	Asn	Gln	Glu	Asn	Arg	Met	Lys	Glu	Ser	Leu	Ala	245	250	255	
Leu	Phe	Gly	Thr	Ile	Leu	Glu	Leu	Pro	Trp	Phe	Lys	Ser	Thr	Ser	Val	260	265	270	
Ile	Leu	Phe	Leu	Asn	Lys	Thr	Asp	Ile	Leu	Glu	Glu	Lys	Ile	Pro	Thr	275	280	285	
Ser	His	Leu	Ala	Thr	Tyr	Phe	Pro	Ser	Phe	Gln	Gly	Pro	Lys	Gln	Asp	290	295	300	
Ala	Glu	Ala	Ala	Lys	Arg	Phe	Ile	Leu	Asp	Met	Tyr	Thr	Arg	Met	Tyr	305	310	315	320

Thr Gly Cys Val Asp Gly Pro Glu Gly Ser Lys Lys Gly Ala Arg Ser  
                                   325                                  330                                  335

Arg Arg Leu Phe Ser His Tyr Thr Cys Ala Thr Asp Thr Gln Asn Ile  
                                   340                                  345                                  350

Arg Lys Val Phe Lys Asp Val Arg Asp Ser Val Leu Ala Arg Tyr Leu  
                                   355                                  360                                  365

Asp Glu Ile Asn Leu Leu  
                                   370

<210> 40

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Illustrative  
                                   N-terminal peptide sequence

<400> 40

Met Thr Leu Glu Ser Ile  
       1                                  5

<210> 41

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
                                   hemagglutinin epitope tag

<400> 41

Asp Val Pro Asp Tyr Ala  
       1                                  5

<210> 42

<211> 11

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Illustrative  
                                   oligonucleotide

<400> 42

ggcgcgccgc c